Gender and Trauma as Predictors of Military Attrition: A Study of Marine Corps Recruits

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Recent studies have shown high rates of premilitary trauma exposure among U.S. military enlistees. Given the association of trauma with later stressor vulnerability, it is important to examine the role of premilitary stress and trauma in adaptation to the stress of recruit training. U.S. Marine Corps recruits (N = 1,530) were surveyed for premilitary histories of interpersonal trauma to examine the relationship between premilitary trauma and attrition from recruit training. The majority of the recruits (47.5% of men and 68.1% of women) reported experiencing at least one interpersonal trauma before entering the Marine Corps. Individuals with a history of interpersonal trauma were at significantly greater risk for attrition; they were 1.5 times more likely to drop out of recruit training than were individuals without a trauma history. These findings suggest that developing interventions to bolster recruits' coping skills may improve adaptation to the recruit training environment and thus decrease attrition.

Introduction

Premature attrition from the military is a significant problem. With almost one-third of all military enlistees failing to complete their initial terms of service,[1] the Department of Defense incurs significant economic and personnel losses from early attrition among first-term personnel.[1] Also, separation from the military can affect individuals financially, occupationally, and emotionally. Recently, the military services have had difficulty meeting recruiting goals, making it especially important that non-end of active service (non-EAS) attrition be kept as low as possible to ensure a strong military force able to meet a high level of operational requirements.[2]

To date, most research examining reasons for premature attrition has focused on demographic variables, rather than on premilitary experiences. However, military personnel with previous stressor experiences are at significantly greater risk for poorer adaptation after war-zone exposure.[3–5] Moreover, there is a robust association between early stressor exposure and subsequent stressor vulnerability in civilian samples.[6,7] Taken together, these observations suggest the importance of the impact of premilitary stress and trauma on adaptation to the stress of recruit training.

Results of two recent studies support a relationship between premilitary trauma exposure and attrition. Among U.S. Air Force recruits, those with a history of sexual abuse were 2.5 times more likely to fail to complete basic training, compared with those without a history of abuse.[8] Naval recruits with different types of premilitary traumas were 1.5 to 2 times more likely to be discharged during recruit training, with the attrition rate varying according to gender and type of trauma.[9]

Among enlisted military personnel, rates of premilitary trauma (e.g., childhood physical and sexual abuse) are substantial and exceed civilian rates.[10–13] In one sample of active duty Army personnel, 58% of women and 35% of men reported experiences of childhood sexual or physical abuse.[12] In a large sample of female Navy recruits, 25% reported histories of childhood physical abuse and 53% reported childhood sexual abuse.[14] Many military enlistees report histories of other types of interpersonal trauma. In a sample of active duty soldiers in the U.S. Army, 31.2% reported they had been attacked by someone with a weapon, and 23.6% reported they had been attacked without a weapon but with intent to injure.[15] Almost 14% of female Navy recruits reported a history of physical assault at age ≥18 years.[14] These alarmingly high rates of interpersonal traumas highlight the need for research examining the impact of trauma on military adaptation.

Premature attrition of women from the military is of particular concern, with non-EAS attrition for women being 30% higher than the rate for men across all branches of service.[16] As the proportion of women in the military grows, this becomes an increasing problem. Women currently constitute nearly 14% of the active duty U.S. Armed Forces, and this percentage is expected to grow.[17] The U.S. Marine Corps (USMC) arguably represents the most difficult service environment for women, with a strongly male-oriented culture and the fewest women of all of the service branches. Despite USMC efforts to adapt to its more diverse workforce, problems with first-term retention have been widely observed for women, with a rate of non-EAS attrition ~1.6 times that for men during the first term of service.[18] These values are higher than in the other services, with the rates of female separation in the other branches ranging from 1.1 to 1.4 times those for men.[16]

The current study focused specifically on the impact of premilitary interpersonal trauma on attrition during USMC recruit training. Because most first-term attrition in the U.S. military occurs during the first 6 months of enlistment, it is particularly important to understand factors that contribute to early attrition.[3] This study is unique in several ways. First, it is the first study to examine trauma and attrition in the USMC. In addition, by examining a wide range of interpersonal trauma, this study expands on the recent studies on sexual abuse and attrition.

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Methodologically, this study also extends earlier attrition research by using survival analysis.

Methods

Procedure and Participants

The present study was part of a larger longitudinal study that assessed adjustment of USMC active duty enlistees over the first 19 months of their enlistment. This study examined attrition during recruit training and used data collected at the start of the first week of training and subsequent attrition data obtained from the USMC.

Questionnaires were administered to 1,530 active duty USMC recruits (male recruits, n = 832; female recruits, n = 698) in group settings at USMC Recruit Depot Parris Island between May and August 1997. Informed consent forms and questionnaires were administered by civilian staff members for this project. No military personnel other than the potential participants were present during the administration. Potential participants were informed that they did not have to participate and they did not have to complete any portion of the questionnaire if they chose not to. They were informed that their responses were confidential and no information regarding their participation (or failure to participate) or their responses would be available to anyone in their command structure. Informed consent procedures included a statement that participation might result in anxiety or other discomfort, with the on-base telephone number of the project staff members (a clinical psychologist and a social worker), who were available if participants experienced distress related to the project. Chaplain and mental health services were also available on base. No participants ever contacted the project personnel with reports of distress regarding participation in the study.

All participants completed a demographic questionnaire and paper-and-pencil survey items assessing their premilitary experiences to provide an index of previous, high-magnitude, stressor experiences (e.g., child abuse or physical assault). Data from additional self-report instruments measuring a variety of constructs, including mental health and well-being, physical health, and personality variables, are not reported here.

Participants ranged in age from 17 to 34 years, with most (82.5%) being ≤19 years of age. Most participants were unmarried at baseline (95.9% of men and 94.5% of women) and had at least a high school education (97.6% of men and 97.5% of women). More than one-half of the female participants (57.8%) were non-Hispanic Caucasian, 17.8% were African American, 20.1% were Hispanic, and the remaining 4.3% were members of other ethnic groups. Two-thirds (66.7%) of the men were non-Hispanic Caucasian, 22.7% were African American, 7.8% were Hispanic, and 2.8% were members of other ethnic groups. The racial distribution for male subjects in this sample differed from the overall distribution for male USMC recruits, with a lower than expected representation of Hispanic subjects; this is presumably because Parris Island serves as the training depot only for men from the eastern half of the United States and the number of Hispanic recruits in the western training depot is much higher. In contrast, Parris Island is the only training depot for female USMC recruits in the country, and the racial distribution for our female subjects was consistent with the overall USMC distribution.

Measures

Demographic Factors

The demographic questionnaire contained items assessing each respondent's age, ethnicity, marital status, and educational level.

Attrition

The USMC provided the attrition data. For the purposes of this study, attrition included discharge for any reason. Although there is a wide range of reasons for discharge, the coding system used by the USMC at the time of this study was imprecise.[16,19] The system allowed discharges for physical, medical, emotional, and legal reasons to be categorized under several possible discharge codes. For this reason, and because we have no previous findings to guide hypotheses about the specific discharge categories, discharge categories were not examined separately.

Interpersonal Trauma

Premilitary interpersonal trauma was measured using items from four validated self-report measures (Table I) to provide a comprehensive assessment of types of interpersonal trauma. A positive endorsement of any one item classified the respondent as having a premilitary history of interpersonal trauma. These measures have been validated with young adult samples.

Childhood Trauma Questionnaire

A 30-item version of the 56-item Childhood Trauma Questionnaire (CTQ)[20] assessed childhood traumatic experiences, including neglect, physical abuse, and sexual abuse. Validity and reliability of this shortened version of the CTQ were shown for a U.S. Army sample.[12] To assess childhood interpersonal trauma, six questions from this instrument were examined.

Finkelhor Sexual Abuse Screening Questions

These four screening questions, developed and used in a national survey, assessed history of childhood sexual abuse.[21]

Sexual Experiences Survey

Two questions from the Sexual Experiences Survey developed by Koss and Oros[22] were included to assess attempted rape and completed rape since age 18.

Diagnostic Interview Schedule

Five items from the modified version of the Diagnostic Interview Schedule[23] were included to assess other interpersonal traumatic stressors.

Additional Traumatic Experiences

One open-ended question was included to capture any other type of traumatic experience not already described, and the narrative responses to this question were evaluated for the presence of interpersonal trauma.

Data Analysis

We used χ^2 analyses to compare rates of trauma across gender and rates of attrition across gender and trauma status

TABLE I

QUESTIONS ABOUT EVENTS AND EXPERIENCES THAT QUALIFIED AS INTERPERSONAL TRAUMAS

CTQ[20]

1. I got hit so hard by someone in my family that I had to see a doctor or go to the hospital. (childhood physical abuse)
2. People in my family hit me so hard that it left me with bruises and marks. (childhood physical abuse)
3. I believe that I was physically abused. (childhood physical abuse)
4. I got hit or beaten so badly that it was noticed by someone like a teacher, neighbor, or doctor. (childhood physical abuse)
5. Someone molested me. (childhood sexual abuse)
6. I believe that I was sexually abused. (childhood sexual abuse)

Sexual Abuse Screening Questions[21]

When you were aged 17 years or younger, can you remember having an experience that you would now consider sexual abuse and that involved:

1. Someone touching you, or grabbing you, or kissing you, or rubbing up against your body either in a public place or in private? (childhood sexual abuse)
2. Someone taking nude photographs of you, or someone exhibiting parts of their body to you, or someone performing some sex act in your presence? (childhood sexual abuse)
3. Oral sex or sodomy (anal sex)? (childhood sexual abuse)
4. Someone trying or succeeding in having sexual intercourse with you? (childhood sexual abuse)

Sexual Experiences Survey[22]

When you were 18 years or older:

1. Did anyone ever force you, threaten you, and/or take advantage of a time when you had used drugs or alcohol to have vaginal, anal, and/or oral intercourse with you but did not succeed? (attempted rape)
2. Did anyone ever force you, threaten you, and/or take advantage of a time when you had used drugs or alcohol to have vaginal, anal, and/or oral intercourse with you with any amount of penetration? (rape)

Modified Diagnostic Interview Schedule[23]

1. You were raped. (rape, adult)
2. You were sexually molested. (childhood sexual abuse)
3. You were seriously physically attacked or assaulted. (serious physical attack or assault, any age)
4. You were physically abused as a child. (childhood physical abuse)
5. You were threatened with a weapon, held captive, or kidnapped (any age).

Additional traumatic experiences

Have you experienced any other situation that was not already asked about which was extraordinarily stressful? If yes, please describe what happened.

groups. To examine differences by gender or trauma status in how long it took a recruit to be discharged (i.e., number of days to discharge), we used Kaplan-Meier survival analysis. Survival analysis enabled us to examine factors associated with the length of time an individual stayed in the military before discharge and to create survival functions to show how long individuals with different characteristics can be expected to remain in the USMC.

Results

Interpersonal Trauma

For this study, the sample was split into two groups, i.e., individuals who reported a premilitary history of interpersonal trauma (e.g., rape, physical abuse, or sexual abuse) and those who reported no history of interpersonal trauma. A history of at least one type of interpersonal trauma was reported by 47.5% of male recruits and 68.1% of female recruits. The difference in trauma endorsement according to gender was significant (χ^2 = 65.095; $p < 0.0{,}001$). Rates of various types of traumas are indicated according to gender in Table II.

Because the base rates of interpersonal trauma and attrition were so much higher for female subjects in our sample than for males, subsequent analyses were performed separately according to gender. We included a gender interaction analysis where appropriate.

Retention and Attrition

The overall retention rate during the 63-day recruit training was 85.2% (for an attrition rate of 14.8%). The first step of our analysis was to examine the relationships of gender and trauma to recruit attrition.

Gender

Looking at our sample by gender, the retention rate through recruit training was 88.1% (95% confidence interval [CI], 85.9–90.3%) for male recruits and 81.8% (95% CI, 78.9–84.7%) for female recruits. The attrition rate was significantly higher (χ^2 = 11.951; $p < 0.001$) for female recruits (18.2%) than for male recruits (11.9%).

Trauma

The retention rate through recruit training for individuals without a history of interpersonal trauma (n = 658) was 88.0% (95% CI, 85.5–90.5%), compared with 83.2% (95% CI, 80.7–85.7%) for individuals who reported a history of interpersonal trauma (n = 869). The attrition rate was significantly higher (χ^2 = 6.852; $p < 0.009$) for participants with a history of interpersonal trauma (16.8%) than for participants without a trauma history (12.0%).

Gender and Trauma

The impact of trauma history on attrition varied by gender. For men, the retention rates through recruit training were comparable for recruits with (87.3%; 95% CI, 84.0–90.6%) and without (89.0%; 95% CI, 86.0–91.9%) premilitary interpersonal trauma (χ^2 = 0.544; $p < 0.461$). In contrast, for women the retention rates were 79.8% (95% CI, 76.2–83.4%) for female recruits who reported a history of interpersonal trauma and 86.1% (95% CI, 81.5–90.7%) for those who reported no interpersonal trauma, a significant difference (χ^2 = 4.058; $p < 0.027$).

Event Time Analysis of Attrition

The second part of our analysis involved measuring the number of training days completed before attrition (event time analysis). In our sample, all attrition occurred between training day 0 and day 58, with a median of training day 23.

TABLE II

RATES OF DIFFERENT TYPES OF INTERPERSONAL TRAUMAS SHOWN BY GENDER

Type of Trauma	Prevalence Rate (%)		Items Used to Determine Presence of Trauma
	Male (n = 832)	Female (n = 698)	
Childhood physical abuse[a]	26.7	38.3	CTQ item 1, 2, 3, or 4 or DIS item 4
Childhood sexual abuse[a]	14.7	51.0	CTQ item 5 or 6, SAS item 1, 2, 3, or 4, or DIS item 2
Attempted rape[a]	4.1	15.4	SES item 1
Rape[a]	3.5	23.9	SES item 2 or DIS item 1
Serious physical attack or assault (other than rape)	12.8	11.0	DIS item 3
Threatened with a weapon, held captive, or kidnapped[a]	17.6	8.0	DIS item 5
Any interpersonal trauma[a,b]	47.5	68.1	

DIS, Diagnostic Interview Schedule; SES, Sexual Experiences Survey; SAS, Sexual Abuse Screening.
[a]Difference in rates between male and female subjects significant at the $p < 0.01$ level.
[b]Because some individuals reported more than one type of interpersonal trauma, this number is not a sum of the other percentages.

Gender

Kaplan-Meier survival analysis was used to analyze the time to attrition. Figure 1 shows the Kaplan-Meier plot of attrition according to gender for our sample. To illustrate, the plot shows that the probability of a male participant staying >40 days is 91%, whereas the probability of a female participant staying that long is 86%. This plot also shows that attrition patterns for men and women were similar until approximately training day 32, when male attrition leveled off and female attrition continued. Male recruits who were discharged had a median number of training days completed of 15, compared with female recruits who were discharged, who completed a median of 26 training days. The log rank test showed that the survival patterns over time for men and women were significantly different ($p < 0.003$). Female recruits were 1.647 times more likely to be discharged, compared with male recruits (95% CI for the hazard or risk ratio, 1.239–2.189).

Trauma

The log rank test revealed a statistically significant difference between the survival patterns over time ($p < 0.005$) for recruits with and without a premilitary trauma history. Among recruits who were discharged, recruits without a trauma history spent a median number of 24 training days, compared with a median of 22 days for recruits with a history of interpersonal trauma. Recruits with a history of interpersonal trauma were 1.48 times more likely to be discharged during recruit training than were those with no such history (95% CI for the hazard or risk ratio, 1.102–1.987).

Gender and Trauma

Figures 2 and 3 show the Kaplan-Meier plots for male and female subjects with and without interpersonal trauma. The log rank test showed no statistically significant difference between the retention patterns for male participants with and without premilitary interpersonal trauma ($p > 0.310$) but did show a difference in retention patterns for female participants with and without a trauma history. Female subjects with a history of interpersonal trauma were 1.58 times more likely to be discharged during recruit training than were those with no such history (95% CI for the hazard or risk ratio, 1.034–2.413; $p < 0.032$).

Additive Model

Next we examined an additive model evaluating the impact of trauma and gender on attrition using the Cox regression analyses. The analyses revealed significant effects of both gender and trauma histories but no significant interaction between the

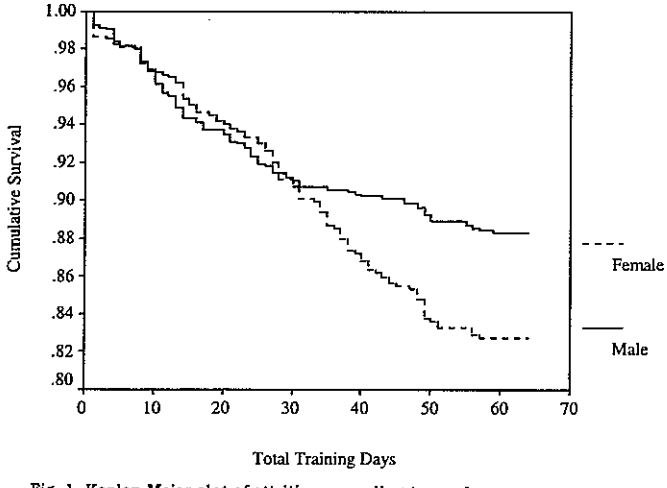

Fig. 1. Kaplan-Meier plot of attrition according to gender.

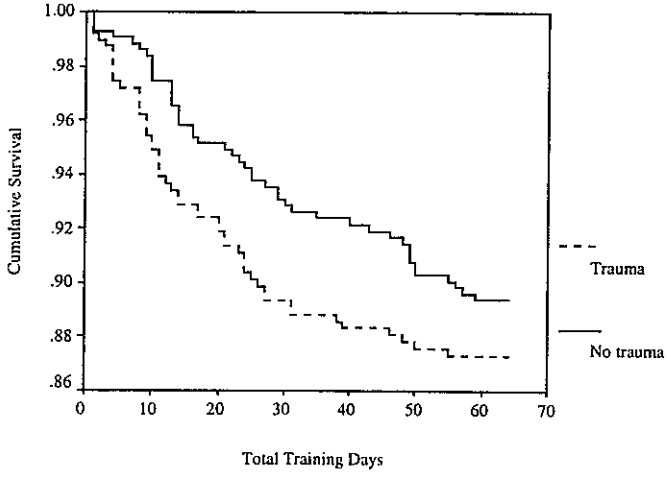

Fig. 2. Attrition for male recruits with and without premilitary trauma.

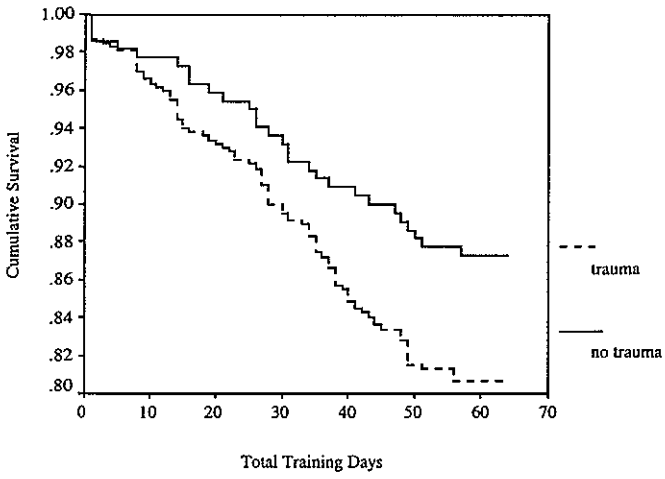

Fig. 3. Attrition for female recruits with and without premilitary trauma.

two. This model indicated that participants with a premilitary history of interpersonal trauma were 1.39 times more likely to be discharged during recruit training than were those with no such history and that female recruits were 1.41 times more likely to be discharged than were male recruits (Table III).

Discussion

The results of this study demonstrate that individuals entering the USMC with a history of interpersonal trauma are 1.4 times more likely to drop out of recruit training than are individuals without premilitary trauma. This risk was most notable for female recruits with a history of interpersonal trauma, who were ~1.6 times more likely to be discharged during recruit training than were women without a history of trauma. We did not find a statistically significant difference between the retention rates for male participants with and without premilitary interpersonal trauma, despite the trend shown in the Kaplan-Meier plot. The lower rates of trauma and attrition for our male subjects resulted in a relatively small sample size of discharged male subjects, which may explain the lack of significant results. Analysis of these issues with a larger sample may find significant results for male participants, comparable to those shown here for female subjects.

This study is the first to document the relationship of premilitary trauma to attrition among USMC recruits, similar to findings from other military recruit samples. However, in contrast to earlier studies that found that male recruits with previous trauma histories were discharged at a higher rate than female recruits with similar histories,[10,11] we found that men with a premilitary trauma history were discharged from recruit training at a lower rate (12.7%) than women with a premilitary trauma history (20.2%). Although this discrepancy might be attributable to the broader definition of trauma used in the current study, compared with earlier studies, the most likely reason for this difference is the very high base rate of attrition for women in the USMC. Other branches of the military have more similar rates of attrition for men and women. Because of the large difference in attrition rates for male and female Marines, it may be more important to understand the reasons for attrition for each gender, rather than focusing on gender comparisons.

The participants in this study reported high rates of interpersonal trauma, with 47.7% of male participants and 68.1% of female participants reporting a history of at least one interpersonal trauma. Comparable figures for combined interpersonal traumas are not readily available, but rates of specific interpersonal traumas in the general population have been found to be substantially lower. The National Comorbidity Survey (NCS), which measured rates of trauma among >8,000 respondents, found a lifetime prevalence of rape among women of 9.2%, compared with 23.9% in our sample.[24] The rate in this sample is particularly alarming because the survey question referred only to adult rape (age 18 or older). Because 68.5% of the women in our sample were 18 or 19 years of age at the time of the survey, a very large number of these rapes occurred in the 1- to 2-year period immediately before enlistment.

Rates of some childhood traumas among our participants also were markedly higher than in the general population. The NCS prevalence of childhood physical abuse was 3.2% for men and 4.8% for women, compared with rates of 26.7% and 38.3% for men and women, respectively, in our study.[24] Reported rates of childhood sexual abuse in the general population have ranged from 2.8% to 16.0% for men and from 12.3% to 27.0% for women, compared with rates of 14.7% for men and 51.0% for women in our study.[21,24] Therefore, the rate of childhood sexual abuse among our male participants is consistent with those in the general population, but the rate among our female participants is substantially higher. In addition, 26.5% of male participants and 31.2% of female participants reported some type of interpersonal trauma other than childhood physical or sexual abuse. Again, these figures are higher than those reported in the NCS for non-combat-related interpersonal traumas during adulthood.

Although trauma rates for our participants are dramatically higher than those found in the general population, they are comparable to those found in other studies of military personnel. For example, large-scale studies of Army and Navy recruits have found rates of childhood physical abuse ranging from 27% to 36% for men and from 25% to 40% for women.[10,12,14,25] Similarly, these and other studies have found prevalence rates of childhood sexual abuse among military recruits ranging from 10% to 18% for men and from 26% to 53% for women.[9,10,12,14,26-28] Some of the broad variance in these prevalence rates is likely attributable to differences in the definition of childhood sexual abuse between studies. In general, the studies with lower prevalence rates defined childhood sexual abuse as

TABLE III

COX REGRESSION MODEL SHOWING THE EFFECTS OF PREMILITARY INTERPERSONAL TRAUMA AND GENDER ON ATTRITION

Variable	Coefficient β	SE	p	Risk Ratio	95% CI
Trauma	0.3212	0.1467	0.029	1.39	1.04–1.85
Gender	0.3358	0.1403	0.017	1.41	1.07–1.85

occurring before age 14, whereas our study extended the range to any sexual abuse that occurred before age 18. Studies of female military recruits have found rape prevalence rates of 18% to 36%, consistent with our findings.[10,14,26-28]

The participants in this study entered the USMC not only with high rates of childhood abuse but also with high rates of reported exposure to other interpersonal traumas in adolescence and early adulthood. It is not clear why our sample and other enlisted military samples report higher rates of trauma before entering the military than are found in the general population. One possible explanation is that individuals from economically impoverished backgrounds may be attracted to the military for the employment and training opportunities it provides, opportunities that may not be readily available in their communities. Many children growing up in such environments are chronically exposed to traumatic stressors, and rates of victimization and other life stressors have been shown to be higher among children and adolescents of lower socioeconomic status.[29-31] Analyses of the average socioeconomic status of incoming recruits to each of the four branches of service found that military recruits had lower overall socioeconomic status than 18- to 24-year-old subjects from the general population.[32,33] Military recruits also showed lower levels of paternal and maternal education, on average, compared with the general population of 18- to 24-year-old subjects.[31-33] If individuals from impoverished backgrounds are over-represented in the armed forces, then it is not surprising to find higher levels of trauma among enlisted military personnel than in the general population.

Anecdotal evidence from clinicians working with military and veteran women points to the possibility that individuals from chaotic backgrounds, such as families where abuse is present, may be attracted to the stability and structure of military life. It may offer them a way to "escape" from an intolerable and possibly dangerous home and community situation. This may contribute to the higher rates of childhood abuse in our sample, particularly among female recruits.

Individuals with a history of trauma may be more likely to be discharged during recruit training because of the way they interpret and react to the stresses associated with boot camp. Recruit training is a time of significant emotional and physical stress for all recruits, as they adjust to the structure and discipline of the military while they are learning and being tested on a number of different skills. For some individuals with a trauma history, these stressors may trigger or exacerbate psychological symptoms. These symptoms, which may include recurrent intrusive thoughts and images of previous traumas and stressful experiences, impaired concentration, disrupted sleep, and emotional distress,[34] may impair the recruit's ability to perform required training tasks.

It is important to note that, although premilitary trauma may be associated with attrition, most individuals in the military with trauma histories are not discharged. In the present study, 80% of the women with trauma histories completed recruit training. The impact of an individual's trauma history may be buffered by personal and interpersonal resource characteristics, which help him or her cope effectively with subsequent stressors.[35] In fact, for some individuals, personal resources and skills developed in the context of personal hardship have been related to exemplary performance both in and out of the military.

Nevertheless, trauma experiences are related to difficult adaptation for a substantial number of military recruits. To the extent that trauma is extremely common among military personnel, the armed forces would be well advised to develop policies and procedures to directly address the specific adjustment and adaptation of these recruits. Although it would be impractical for the military to assess past trauma experiences of recruits, programs could be implemented to increase skills that have been shown to be helpful for those who have experienced trauma. Programs to enhance positive coping skills, decrease anxiety, and manage interpersonal conflict effectively could be implemented in general training and would bolster these qualities among individuals without background vulnerabilities as well. Implemented early in the recruit training process, such programs could help recruits better cope with recruit training and military service.

Two caveats should be mentioned here. First, subjective reports of an individual's past experiences are largely unverifiable, and a wide range of factors may encourage underreporting or overreporting. Although we attempted to optimize the testing situation, for example by stressing confidentiality, the trauma histories we obtained are not verified by other information. Second, this study was limited by the use of brief questionnaire methods to assess traumatic experiences. Although they would be more difficult and costly to complete, interview methods that allowed for probing and additional detail would provide a richer examination of this phenomenon.

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